

CLAIMS

What is claimed is:

1. A method for automatically maintaining focus and exposure settings in a digital imaging device, comprising:
  - activating a continuous focus and exposure mode in the digital imaging device;
  - capturing and analyzing first frames having a first resolution until a scene change is detected; and
  - capturing second frames having a second resolution greater than the first resolution and adjusting the focus and exposure settings based on the second frames, when the scene change has been detected.
2. The method of claim 1, wherein the continuous focus and exposure mode is activated in response to an input signal.
3. The method of claim 2, wherein the input signal comprises a shutter button of the digital imaging device being depressed to an intermediate position.
4. The method of claim 2, wherein the input signal comprises selection by a user of a continuous focus and exposure mode option in the digital imaging device.
5. The method of claim 2, wherein the input signal comprises sensing that a user is holding the digital imaging device in a predetermined manner.

6. The method of claim 2, wherein the input signal comprises sensing that a shutter  
2 button of the digital imaging device is being lightly touched by a user.
7. The method of claim 1, wherein analyzing first frames comprises summing the  
2 absolute value of pixel differences between at least two first frames.
8. The method of claim 1, wherein analyzing first frames comprises comparing an  
2 aggregate luminance of at least two first frames.
9. The method of claim 1, wherein analyzing first frames comprises detecting a  
2 single moving element in an otherwise static scene.
10. The method of claim 1, wherein the second frames comprise one of full-resolution  
2 imaging-sensor readouts, VGA, SVGA, 720P, and single-field readouts from an  
imaging sensor having an odd number of fields.
11. The method of claim 1, further comprising:  
2 performing coarse focus and exposure adjustments in the digital  
imaging device based on first frames after the scene change has been detected  
4 and prior to adjusting the focus and exposure settings based on the second  
frames.
12. The method of claim 1, wherein a live view mode of the digital imaging device is  
2 active in which first frames are captured and presented on a display of the digital  
imaging device both before and after the scene change has been detected, the first

4 frames being captured in addition to the second frames during adjustment of the  
focus and exposure settings based on the second frames.

13. The method of claim 1, wherein the digital imaging device is a digital camera.

14. A digital imaging device, comprising:

2 an imaging module to convert optical images to digital image frames,  
the imaging module being configurable to produce first digital image frames at  
4 a first resolution and second digital image frames at a second resolution,  
wherein the second resolution is greater than the first resolution;  
6 scene analysis logic that analyzes first digital image frames to detect a  
scene change; and  
8 focus and exposure adjustment logic configured to adjust focus and  
exposure settings of the digital imaging device based on second digital image  
10 frames, when the scene analysis logic has detected the scene change.

15. The digital imaging device of claim 14, wherein the digital imaging device has a

2 continuous focus and exposure mode.

16. The digital imaging device of claim 15, further comprising:

2 an input control to activate the continuous focus and exposure mode.

17. The digital imaging device of claim 15, further comprising:

2 an attitude sensing subsystem to detect how the digital imaging device  
is being held by a user; and

4 activation logic configured to activate the continuous focus and  
exposure mode, when the attitude sensing subsystem detects that the digital  
6 imaging device is being held in a predetermined manner.

18. The digital imaging device of claim 17, wherein the attitude sensing subsystem  
2 comprises one of an accelerometer and a gyroscope.

19. The digital imaging device of claim 15, further comprising:  
2 a shutter button;  
4 a tactile sensing subsystem to detect whether the shutter button is being  
lightly touched by a user; and  
activation logic configured to activate the continuous focus and  
6 exposure mode, when the tactile sensing subsystem detects that the shutter  
button is being lightly touched by the user.

20. The digital imaging device of claim 15, further comprising:  
2 a shutter button having an intermediate position and an image capture  
position; and  
4 activation logic configured to activate the continuous focus and  
exposure mode, when the shutter button is depressed to the intermediate  
6 position.

21. The digital imaging device of claim 14, wherein the scene analysis logic is  
2 configured to sum the absolute value of pixel differences between at least two first  
frames.

22. The digital imaging device of claim 14, wherein the scene analysis logic is  
2       configured to compare an aggregate luminance of at least two first frames.
23. The digital imaging device of claim 14, wherein the scene analysis logic is  
2       configured to detect a single moving element in an otherwise static scene.
24. The digital imaging device of claim 14, wherein the imaging module comprises an  
2       imaging sensor and the imaging module is configured to produce second frames  
comprising one of full-resolution imaging-sensor readouts, VGA, SVGA, and  
4       720P.
25. The digital imaging device of claim 24, wherein the imaging sensor has an odd  
2       number of fields and the imaging module is configured to produce second frames  
comprising readouts from a single field of the imaging sensor.
26. The digital imaging device of claim 14, further comprising:  
2           a display;  
                display control logic configured to present first frames on the display,  
4           when a live view mode of the digital imaging device is active; and  
                wherein the imaging module is configured to capture first frames in  
6           addition to second frames during adjustment of the focus and exposure  
settings by the focus and exposure adjustment logic, when the live view mode  
8           is active.

27. A digital imaging device, comprising:

2                   means for converting optical images to digital image frames, the means  
for converting optical images to digital image frames being configurable to  
4                   produce first digital image frames at a first resolution and second digital image  
frames at a second resolution, wherein the second resolution is greater than the  
6                   first resolution;  
                      means for analyzing first digital image frames to detect a scene  
8                   change; and  
                      means for adjusting focus and exposure settings of the digital imaging  
10                  device based on second digital image frames, when the means for analyzing  
first digital image frames has detected the scene change.